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Mine air monitoring shows few contaminants exceed limits

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2/23/2006 11:17 am

Following nearly one full year of air monitoring around the old Anaconda Mine site west of town, experts have found most particulate matter to be below thresholds of concern with only a few metals exceeding preliminary remediation goals (PRGs).

Guy Graening, principal engineer for consulting firm Brown and Caldwell, presented data the firm has collected between January and September 2005.

“This is a good data set,” he said Tuesday during a technical work group meeting in Reno.

Information as a whole does not show a predominant wind direction near the mine; however, Graening added this changes when one takes only the highest wind speeds into account. At this point, prevailing winds would be southwest to northeast.

He said PM10 (particulate matter less than or equal to 10 micrometers) is standard for the National Ambient Air Quality Standard (NAAQS) and PM10 results were well below the NAAQS. Also, total suspended particles (TSP) parameters were considered along with PM10 in Tuesday’s presented data. Between the two, Graening said a relatively good correlation existed in the data.

With PM10, Graening added particulate matter tended to decrease as wind speed increased and vice-versa. This poor correlation became better if only high wind speeds are taken into account, he said. A poor correlation was also the case in regards to wind direction and particulate matter.

Douglas Herlocker, environmental scientist/senior air quality specialist of Tetra Tech EM, Inc., said these types of unexpected findings further shows how the site tends to require certain conditions before dust becomes airborne.

“There’s some other factors at work here,” he said noting moisture and soil as well as other variables are likely candidates.

Herlocker also said TSP parameters have shown some interesting results as well in that some inconsistent numbers existed between PM10 and TSP when it came to radium and thorium. He said particle size might be a factor; however, with radionuclides at or above risk levels in some samples, more monitoring is likely to be necessary. With this, he reiterated fourth quarter data has not yet been examined.

Also to this, Jim Sickles, remedial project manager for EPA region 9, said the threshold levels considered for said radionuclides are chronic rather than acute. In other words, one would have to be exposed to these exceeded levels every day for 30 years before effects would show. With high wind events relatively rare, he added everyday exposure to local residents is not the case with these levels.

Graening's presentation showed, so far, three metals including arsenic, chromium and cobalt exceeded the given PRG; however, numbers indicate they are within the risk management range of the EPA.

PRGs, or preliminary remediation goals, are risk-based concentrations in environmental media, which are considered by the EPA to be health protective of human exposures (including sensitive groups) during the course of a lifetime. These are often utilized when more site-specific or ambient standards are not available. For air monitoring efforts at the mine, a residential PRG was selected.

Further information from Graening indicated said exceedances were caused by the PRG being lower than the minimum detection limit for the three elements in question. As a result, standard numbers set in place for non-detectable elements place the level above PRG.

In any case, Graening said it might not be necessary to conduct a health risk assessment based on the relatively low numbers already returned.

Radiological chemicals (i.e. radium, thorium and uranium) did not exceed the PRG, though notes presented indicate PRGs were not available for radiochemicals in tables given to Brown and Caldwell. This is similarly the case for 11 of the 21 metals included in the analysis list. Those without PRGs were compared to EPA guidance documents, Graening said.

He said the metals exceeding PRGs came from three monitors located north and northeast of the site. With this, a problem is presented as this occurred both when the wind was traveling north (off-site) and south (on-site). In other words, other offsite sources for particulates might need to be considered.

Herlocker later added one of the three monitors in question had consistently higher concentrations of particulates.

A problem noted by Mark Evans of the Agency for Toxic Substances and Disease Registry is the existing data, which does not yet include data from the fourth quarter, does not represent high wind/dust events around the mine. This has come from the fact the monitors, set on a national schedule of a consecutive 24 hour run on every sixth day, have not been running during high wind events. Evans indicated this presents a data gap.

Higher detection anomalies like those found at the site's north end coupled with the fact higher concern wind events have not been monitored has led the EPA to seriously consider continued air monitoring. Sickles said the intent on EPA's part was never to limit air monitoring to simply one year. He said, on average, it takes at least three years of monitoring to determine a given area's ambient air levels.

The question being asked now is whether more constituents of concern could be added to the monitoring list. Sickles said the relatively small air filters could only be sectioned and examined for so many tests before sample size becomes problematic.

To this, he said some contaminants not posing concern on already collected data might be removed to allow for additional constituent testing. Based on ATSDR comments and concerns of sulfur-related particulates, sulfides and sulfates might be two of these constituents. Concerns for these elements come from the fact much of the north/northeast portions of the site are sulfide tailings.

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